

The Dorris

MOTOR COACH



"Built Up to a Standard - Not Down to a Price"



Looking Inside

IN PRESENTING Dorris motor coaches, it is with the sincere conviction that no more durable, economical or finer motor coaches can be offered. They are amply qualified to operate over a long period of time, thoroughly capable and absolutely dependable in the most severe daily usage.

They are the result of more than twenty years of engineering thought and skill directed to the scientific manufacture of fine chassis. The high regard in which Dorris motor coaches are held is recognition of the achievement of its goal, because Dorris motor coaches have proved to be the most efficient, durable and economical under all sorts of ordinary and extraordinary service conditions.

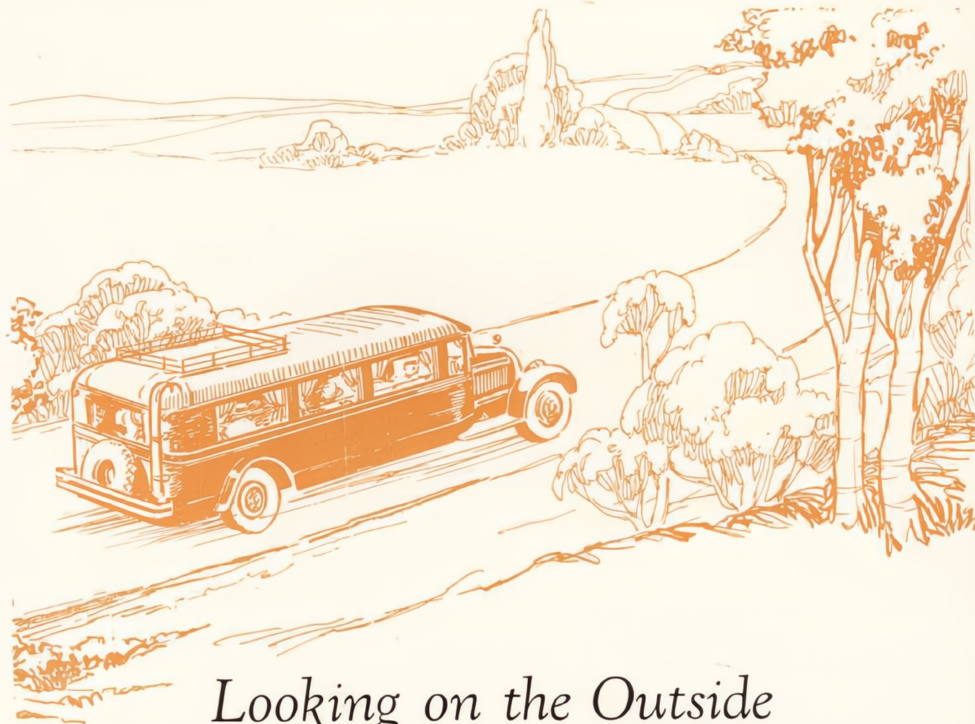
Dorris Motors, Inc., feels that this acknowledgment implies an obligation on its part to perpetuate that confidence, and to inspire its men to a complete realization of the meaning of its long adopted slogan:

*"Built Up to a Standard,
—Not Down to a Price."*



The Dorris Coach

THE DORRIS MOTOR COACH CREATES TRAVEL.



Looking on the Outside

MOTOR COACH travel has developed very rapidly because of the exceptional passenger comfort and convenience offered with frequency of service; and also to the extensive building of permanent highways under the supervision of the Federal and State governments.

Such improved roads, everywhere about us, afford ideal routes for motor coach lines where density of population is sufficient to support a transportation system. Even now, a number of forward-looking investors, have perceived the profit-making

opportunities of motor coach transportation, and are establishing service in and about the cities and outlying communities. Where long continuous stretches of hard surfaced roads are available, companies are being organized to operate motor coaches on regular schedules at intervals justified by the travel conditions.

The public has responded generously to this new method of travel, largely because the passenger can get to his destination quickly, comfortably, safely and pleasantly. And the operator who is willing to provide

equipment with these qualities attracts that class of people who make motor coach transportation as a business, highly profitable.

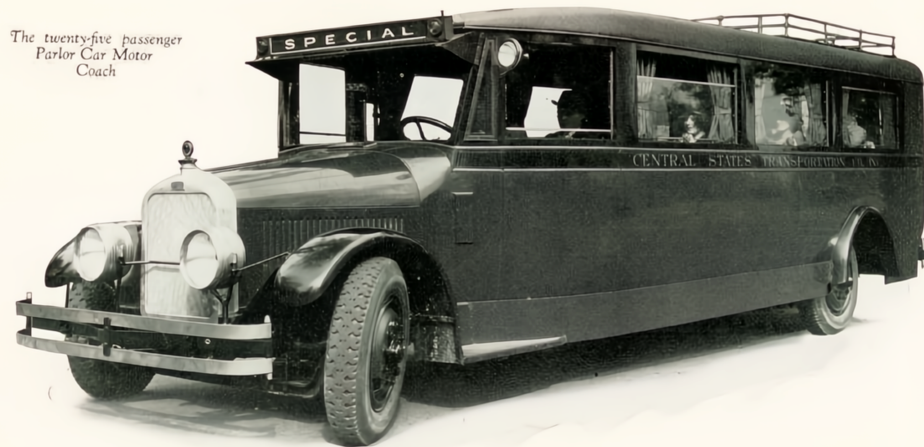
And today motor coach transportation as a business has only begun. A few of its uses have become known and put into operation. What possibilities the future holds will be revealed as the years pass. Nearly every day some new use for motor coaches is discovered which yields splendid returns on the capital invested.

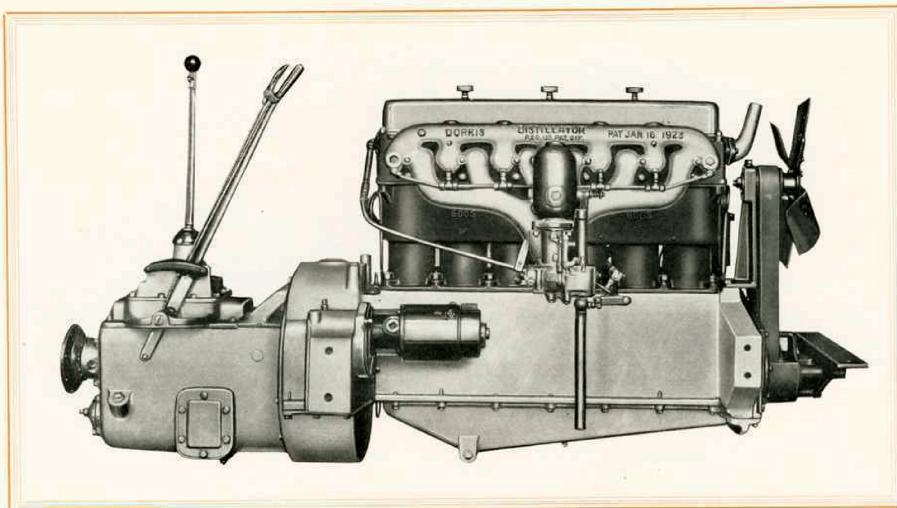
The following article reprinted from The Standard Daily Trade Service of May 12th, 1925, is worthy of thoughtful consideration in this connection.

"The advantage of the bus line, as compared with the traction line, is shown by the fact that it is estimated that it requires only \$1.25 of investment in a bus line to produce \$1.00 in annual revenue, whereas it requires fully \$4.00 invested in traction lines to produce the same return. The future development of both urban and suburban travel in many sections undoubtedly lies along the lines of increased bus service rather than in further investment for traction lines."

Because the Dorris motor coaches embody the qualities demanded by the traveling public—smart appearance, safety, physical comfort and speed; that they include the qualities demanded by owners and operators—long life and economical upkeep; therefore, we offer Dorris motor coaches—which have a recognized profit-earning ability—with a sincere conviction that you will experience the same complete owner satisfaction that hundreds of Dorris operators are enjoying.

The twenty-five passenger
Parlor Car Motor
Coach





*The economical source of profit-making power for Dorris Coaches—The L6 engine
The crankshaft and camshaft each carry seven heavy main bearings*

THE engine is the heart of a motor coach. For the Dorris motor coach, the engine is built completely within the Dorris shops.

The first Dorris engine was built in 1905, a four cylinder, vertical, valve-in-head type with five large main bearings on crankshaft, multiple disc clutch and unit power plant.

Similar to the first Dorris engine in fundamental principles, are the powerful six and four cylinder distillator equipped engines of today. While many improvements and refinements have been tested, only those which add definite value have been embodied in the present Dorris

engine which is remarkable for its simplicity and accessibility. Simplicity and accessibility effect an important saving of time and expense whenever it is necessary to service the motor.

An important exclusive feature of the Dorris engine is the nationally known Distillator. The Distillator is a patented device which assures vaporization of the heavy ends of gasoline which passes the carburetor and before it enters the cylinders. So much heat is required to completely vaporize present-day gasoline, that with ordinary equipment, a certain percentage is not consumed at all. The result is, that liquid

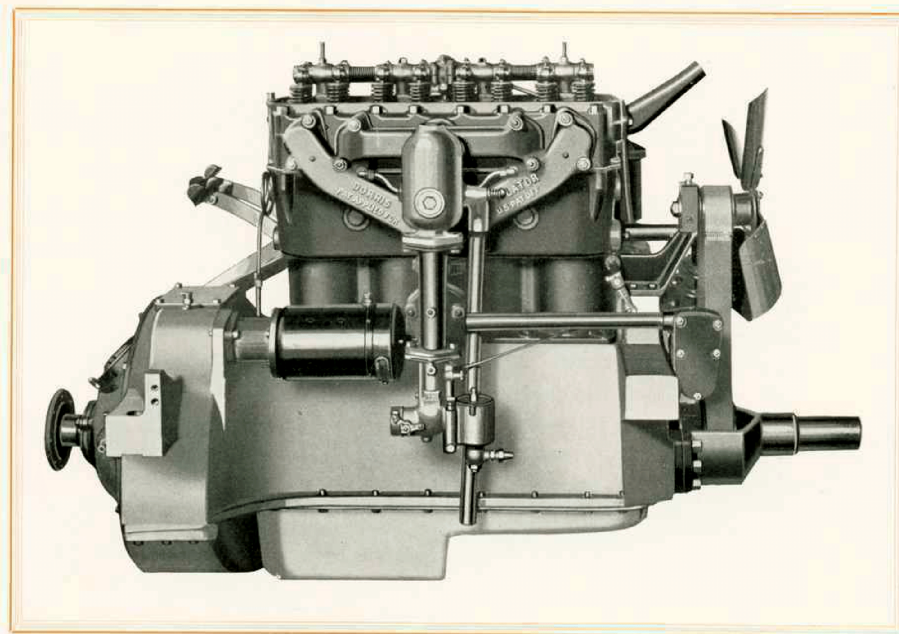
fuel accumulates in the cylinders, works past the pistons into the crankcase, impairing the lubricating qualities of the oil.

The Dorris distillator corrects this trouble by preventing the unvaporized fuel entering the cylinders in a liquid state. All the liquid fuel is trapped in a reservoir in the exhaust manifold, also in smaller reservoirs placed under each intake port. Here the liquid fuel remains until the temperature becomes high enough to vaporize it. The vapor is then caught up by the inrushing

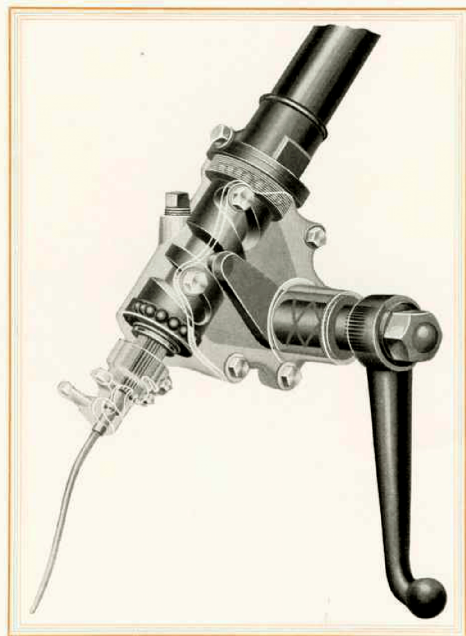
mixture from the carburetor and carried into the combustion chamber where it is converted into power.

To the owner of a Dorris motor coach, this means an unusual economy of fuel and lubricating oil; longer life for the engine because the oil in the crankcase is not diluted, causing abnormal wear of the cylinder walls.

It assures perfect vaporization of all gasoline, comparative freedom from carbon troubles, fouling spark plugs, and affords a quick get-a-way, regardless of temperature conditions.



Distillator side of Model M4 Motor Coach Engine. Five large main bearings on the crankshaft and camshaft



This new Ross steering will stay put—no matter how deep the holes

Under every condition it gives ease and certainty of control

CAM and lever type of steering used on all Dorris coaches is quick - acting and positive under all driving conditions. The ease of control and complete absence of road shock eliminates driving fatigue. Easy handling has been further obtained by just the proper rake of the steering column, at the top of which a selected walnut wheel, twenty inches in diameter, is fitted. This construction enables the operator to sit in a natural and comfortable position while driving his coach.

The spark and throttle control levers, also the horn signal button, are conveniently mounted on top of the steering column. A heavy aluminum bracket attached to the cowl holds the steering post perfectly rigid at all times, eliminating rattle and any tendency to bind. In design and construction, earnest effort has been put forth to secure for the operator of Dorris coaches, the utmost comfort and convenience, thereby conserving his strength and increasing the safety factor of operating.

TIMKEN front axles are used with heavy flanges at top and bottom, single I beam drop-forged and heat-treated. The steering spindles are one-piece forgings, heat treated to withstand abnormal road shocks.

The steering arm ball on the spindle is detachable, so new balls may be inserted instantly, if necessary. The balls are made of heat-treated, case-hardened chrome nickel steel; the spindle bolts are of heavy alloy steel, heat-treated, hardened, drilled and grooved for positive lubrication.

The rear axle has been developed to meet the requirements of special motor coach chassis construction. It involves all the essential features necessary to long, gruelling and successful operation. Careful consideration has been given to the safety and comfort of passengers, also to maintenance economy with respect to operating and up-keep costs.

The rear axle, of Wisconsin manufacture, is of true double reduction principle with all driving gears located in a unit assembly. By this arrangement the gears, differential and bearings are protected from dirt and dust, while the entire mechanism operates in an oil bath.

Road shocks do not affect the alignment of the drive parts, neither can overload nor abuse throw the gears out of correct mesh, which assures long axle life and greater freedom from trouble.

The axle is of the fixed hub—or semi-floating—shaft type. Shafts, bearings and all other parts are proportioned to

yield maximum strength. Dual bearing construction is used in the wheel positions which provides easier adjustments and more load capacity than the single bearing installation.

Outside ribs provide greater strength and rigidity, further insuring at all times perfect alignment of working parts.

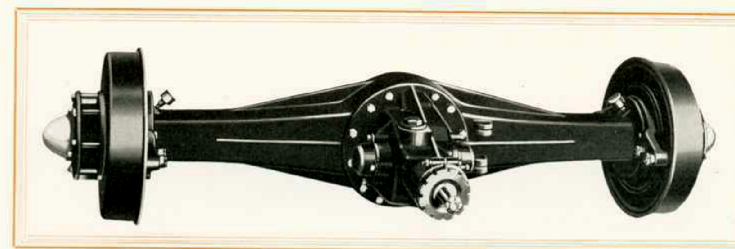
Spiral bevel gears are used in the first reduction; spur gears form the second reduction. The best alloy steels available are used in forging these parts. The tooth forms are liberal to enable them to yield almost unlimited service.

Axle shafts and spur gear cross shafts are made from chrome nickel steel forgings. All of the shafts, from the largest to the smallest, have ten splines; all of the splines are cut after heat-treatment to insure absolutely correct fit with differential side gears and drive flanges.

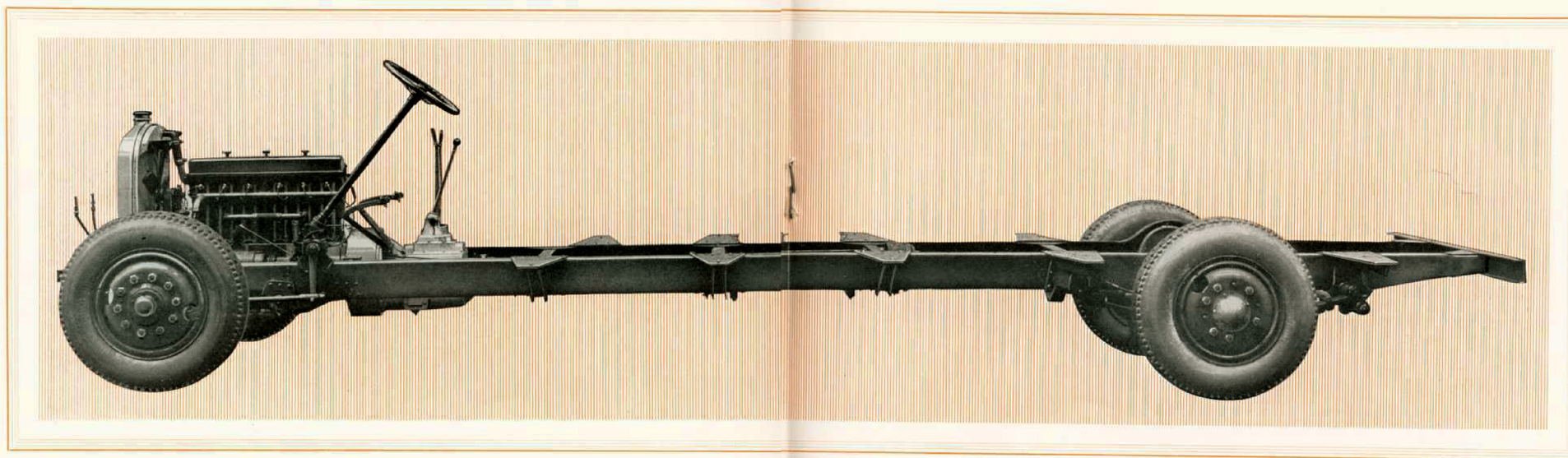
The pinion shaft arrangement permits unusually low body mounting with a low center of gravity for the complete vehicle. An exceptional underbody or road clearance, which permits travel through snow and over roads impassable to most axles, is an advantageous feature in the Wisconsin.

Housings are single piece certified malleable castings extending from wheel to wheel, without joints—welded or riveted—to open.

The double reduction type of rear axle is light for a given strength, and absolutely silent, especially after extended service, a feature much desired by coach operators.



The rear axle is a sturdy steel unit further strengthened by outside ribs securing perfect alignment of shafts and bearings



The Dorris Model L6 chassis reveals a simplicity of design, mechanical accessibility seldom found in motor coach manufacture. Building fine chassis for more than twenty years has made such superior construction possible.

THE accepted motor coach chassis of today is the one designed and built exclusively for this kind of service. The adapted passenger car chassis is no more adequate than is the high frame freight truck chassis. The motor coach requires special engineering design and construction; a proper blending of the flexibility and speed of the passenger car with the ruggedness and durability of the freight truck.

The Dorris motor coach chassis is especially designed and built for this one service.

When it became apparent, several years ago, that the desire for travel by motor coach was steadily growing, the engineering department directed its thought to serious study of that subject. Mr. G. P. Dorris, chief engineer, soon after, went to California to study the problem. He went there because the Pacific coast, at that time seemed to reflect the most advanced thought, interest and activity in motor coach travel. Mr. Dorris interviewed hundreds of people—some connected with the manufacture of busses, as they were called then, some connected with the operation of bus lines, some bus line owners, and some passengers and patrons of bus lines. In this way the viewpoint of the owner, the operator, the patron and the manufacturer were obtained and proved of much value.

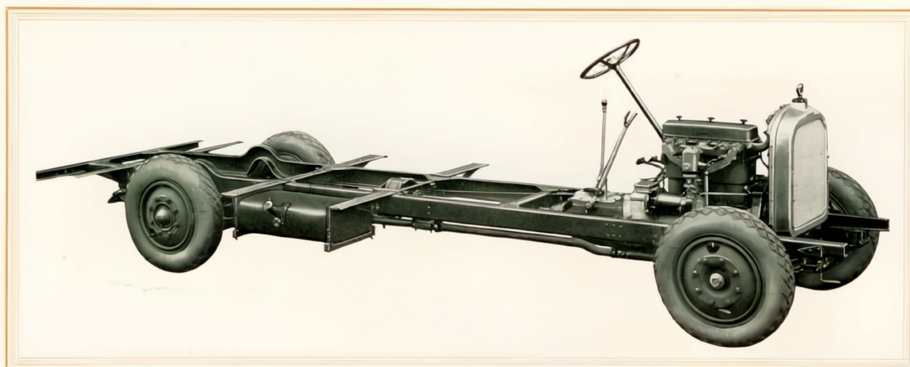
After a careful analysis of facts and information gathered and further study, the first Dorris motor coach chassis was designed, built and put into service. It was daily scrutinized by critical engineering eyes,

constantly demanding improvements and refinements until a perfectly balanced, amply powered, silent, safe, comfortable and smooth riding vehicle was produced.

Throughout this experimental period the factors of performance and economical upkeep were kept continually in mind, and they are today the outstanding features. More than twenty continuous years of building fine chassis have made possible the production of motor coaches which meet acceptably the demands of the traveling public, as well as produce satisfactory profits for the owner and operator.

The channel section cold-pressed steel frame has been designed to successfully withstand the severe strains and vibrations of motor coach service. It has not been adapted from truck or passenger car construction. In designing the frame, strength, safety, comfort and speed have been the predominating factors considered in laying a substantial foundation for a robust mechanical vehicle.

The factor of passenger safety has been increased by the use of a low-hung frame, the side rails of which are thickest where the strain is greatest, and taper toward the ends. The top of the frame is only 23½ inches from the ground. This makes it possible for the body floor to be low, which impresses passengers favorably and makes entrance and exit easy. It also prevents sidesway and makes possible a level floor free from freak construction over rear axles and clutch housings. The Dorris motor coach floor is level from end to end.



Because of its simple and practical construction, the Model M4 chassis is a worthy rival of its more powerful six-cylinder kin

THE service brake operates on the rear wheels; the emergency brake on drum on propeller shaft located midway between gear-box and differential housing. Both brakes are of ample dimensions and readily accessible for adjustment.

Rear wheel drums are of liberal width and thickness to absorb a greater amount of friction heat, thereby extending the life of the brake lining, and giving more positive action in slowing down the coach. Both brakes are quick-acting and powerful in operation.

SEMI-ELLIPTIC chrome vanadium steel springs made by the Mather Spring Company are used on all Dorris coach chassis. The leaves are unusually long and wide but thin, properly tempered for long life without a tendency to settle or break.

THE Hotchkiss drive is used in Dorris motor coach chassis with the double reduction rear axle. No rigid radius rods or torque arms are necessary. Instead, special chrome vanadium steel springs are

used to provide a cushioned transmission of power from engine to rear wheels, which relieves the units from shock and perceptibly improves performance. This suppleness of drive also shields passengers from shock and road vibration, reducing wear on chassis and increasing operating efficiency.

Time has proven the Hotchkiss drive of great advantage in motor coach construction. Flexible application of engine power shields the entire chassis from solid shock, gives smoother acceleration by providing gradual overcoming of inertia, and saves the clutch from much wear due to elimination of slipping generally adopted to secure an easy start with torque arm or radius rod drive.

Hotchkiss drive does not mean the mere omission of radius and torque members. The use of Hotchkiss drive has been undertaken for sound engineering reasons, and at considerably more cost, than with use of a rigid drive. It requires springs of the very best quality as well as certain differences in suspension of driving axle.



Budd-Michelin all Steel Wheels

Four or six wheels are optional equipment on either the L6 or M4 model chassis. Budd-Michelin demountable rolled pressed steel disc type are particularly adapted for motor coach service. Being of convex form permits placing brakes and king pins within the wheel, better braking and easier steering, also affording protection of brakes from mud and water.

The wheel is lighter than either cast steel or wood wheels; tapers toward the rim, which makes starting and stopping easier, and is non-collapsible. One man can change a tire with comparative ease.

A busy corner in the Chassis Assembly Room

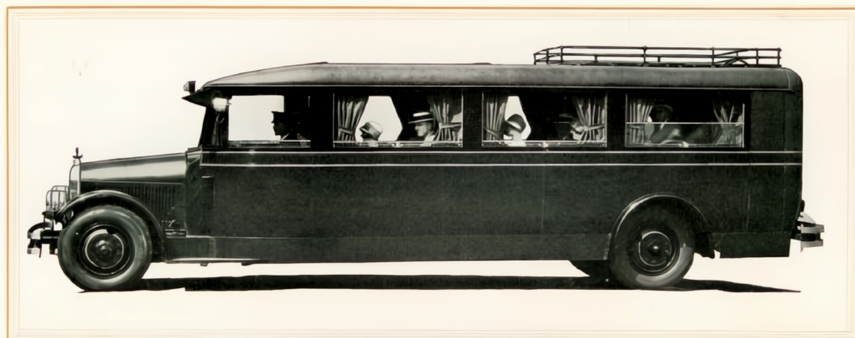


Whether four or six tires are used on the chassis, an extra wheel is furnished and attached to the rear of the coach.

THE four-speeds forward and reverse transmission of Brown-Lipe manufacture provides gear ratios to cover the entire range of operating conditions. It is mounted integral with power plant; is smooth and silent in operation, driving direct on fourth gear. Gear shift lever is ball-jointed and mounted on top of the cover plate; the reverse gear lock is set in operation by lifting a trigger just below the ball at top of shifter lever. Hand brake lever is attached to the right side of gear-box.

The interlocking system, which makes it impossible to shift more than one gear at a time, and all shifter forks, are made of drop-forged alloy steel, case-hardened, and enclosed.

All of the bearings are Timken made, retained in steel sleeves, and adjusted by use of shims. The teeth of all gears are ground to insure quietness of operation.



Twenty-five passenger Parlor Car Coach showing graceful body lines and low gravity center,—a great safety factor

THE parlor car is the newest type of coach body, and deservedly the most popular one. It is equally adapted to short or long distance routes; quite frequently for inter-city travel where quality-service is required.

The illustration above will give you a good idea of the beauty of lines and elegant appointments. The brief specifications following will acquaint you with its excellence of construction.

The framing consists of oak sills and roof ribs; ash pillars and roof rails. Outside panels are 16 gauge half-hardened aluminum and 20 gauge auto metal securely fastened to the pillars, rails and sills. Floors of oak rabbeted into the sills; slatted roof securely fastened to the roof ribs. The roof is covered with high grade top material fastened securely to side rails, covered with metal drip moulding.

The one entrance door, extra wide, is located opposite to and operated by the driver. A concealed emergency door at the rear opens on the street side. Four very wide plate glass windows on either side operated by regulators; the single wide window at the rear is stationary.

A smaller compartment at the rear, comfortably seating nine passengers, separated by partition with sliding door, plate glass windows above the seatbacks, may be used for smoking.

Parlor car seats are of wicker, individual, leather tipped with deep cushions. The upholstery material is Spanish leather,

color optional. Entire ceiling and sides are lined with the same material; the floor is covered with special high grade linoleum.

Electric ceiling lights are of frosted dome pattern, lights on instrument board, on destination box attached to sun visor and spot light attached to left front corner post, are operated by switches conveniently located for the driver.



A glimpse inside the Parlor Coach showing leather covered individual seats



The twenty-five passenger Sedan Coach, preferred for long distance tours. As fine a coach as can be built

Ventilators of approved manufacture are installed in roof and cowl to meet temperature requirements.

The windshield of sloping type, both wind-proof and rain-proof, is noiseless, and with ample vision for driver.

Special spare wheel rack is attached to rear or street-side of body, as desired.

Baggage is carried on the roof at rear, inside an attractive brass railing, and protected from the weather by heavy duck cover, fastened with buttons. The floor inside of railing is made of heavy oak slats. A narrow metal ladder at rear makes baggage accessible.

The entire coach may be specified in colors which conform to equipment already in service, if desired. All coaches are finished in Du Pont's duco, the new finish which does not chip, crack, nor check; and its original lustrous beauty remains under the most ordinary care.

Seating capacity of the larger model L6 coach is 25 passengers; of the smaller model M4 coach is 19 passengers.

BUILDER'S specifications for the Sedan body are similar in material and workmanship to the parlor car. The seating arrangement, manner of entrance and exit, and upholstery materials are different. The seats in Sedan body resemble those of the limousine with two or three additional rear seats. Just back of the rear seat is a glass partition, beyond which is a smoking compartment.

An entrance door is located at the end of each seat on the curb side, the upper half of which is a plate glass window, with regulator. At the opposite end of the seat is a similar window with regulator. Entrance to smoking compartment is through a door at rear on curb side of coach.

The driver's and smoker's compartments are upholstered and lined in genuine leather; the center or ladies' compartment is upholstered and lined with high grade limousine cloth.

Baggage is carried on the roof protected with heavy tarpaulin, as described for parlor car. Entire coach finished in Duco; color optional.

The seating capacity of the larger L6 coach is twenty-five; of the smaller M4 coach is nineteen passengers.

A view in the busy shops where all the parts are made



STANDARD WARRANTY

Approved as to form by National Automobile Chamber of Commerce, Inc.

WE WARRANT each new motor vehicle manufactured by us, whether passenger car or commercial vehicle, to be free from defects in material and workmanship under normal use and service, our obligation under this warranty being limited to making good at our factory any part or parts thereof which shall, within ninety (90) days after delivery of such vehicle to the original purchaser, be returned to us with transportation charges prepaid, and which our examination shall disclose to our satisfaction to have been thus defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our vehicles.

This warranty shall not apply to any vehicle which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident, nor to any commercial vehicle made by us which shall have been operated at a speed exceeding the factory rated speed, or loaded beyond the factory rated load capacity.

We make no warranty whatever in respect to tires, rims, ignition apparatus, horns or other signaling devices, starting devices, generators, batteries, speedometers or other trade accessories, inasmuch as they are usually warranted separately by their respective manufacturers.

DORRIS MOTORS, Inc.,
St. Louis, Mo.

MOTOR COACH design and construction embody four primary essentials: Performance, Comfort, Appearance and Economy.

Then, obviously, that motor coach which renders the most satisfactory service over the longest period of time; carries its passengers with the greatest safety, comfort and convenience; commands attention for graceful body lines and pleasing color; and does these things with the lowest possible operating cost, is the ideal motor coach.

Every day thousands of people are riding in some coaches rather than in others because the coach they choose has a greater proportion of the four necessary factors.

For more than twenty years Dorris has built fine chassis, advanced in design, honest in construction and reasonably priced. Dorris chassis and coaches embody in a high degree the four primary factors which create and retain motor coach patronage.

Why not purchase a balanced transportation service of recognized profit-earning ability—such as the Dorris? A personal invitation is extended to inspect the factory and methods of manufacture, or to write for photographs, operating costs and blue-prints.

DORRIS MOTORS, INC.
ST. LOUIS, MO.

"Built Up to a Standard

The Dorris

Not Down to a Price"



A view of the Dorris Factory plant at Saint Louis, Missouri, in which the Dorris motor coach chassis are built by men carefully and thoroughly trained in their several crafts. More than forty per cent of the men who design and supervise operations have been in the employ of the Company fifteen years or longer.

DORRIS MOTORS, INC.

ST. LOUIS, MO.

THE DORRIS MOTOR COACH CREATES TRAVEL

no 16cs

The Dorris

Motor Coach Specifications

*"Built up to a Standard
—not down to a Price"*

Dorris Motors, Inc.
ST. LOUIS, MO.

MECHANICAL SPECIFICATIONS MODEL L6 COACH CHASSIS

AXLE (FRONT)—Timken drop forged I-beam, model 1560.

AXLE (REAR)—Wisconsin double reduction, model 67-C, gear ratio 4.89 to 1; fitted with duplex wheel bearings and special oil retaining guards. Hotchkiss drive construction.

BRAKES—*Service*—Special Dorris made, double cast shoe adjustable type, brake drums 18x5 inches. *Emergency*—External contracting on propeller shaft 10x5 inches.

CARBURETION—The Stromberg carburetor is used to correctly proportion the gasoline and air to the Dorris Distillator. This carburetor maintains the proper relation of gasoline and air through the entire driving speed range, 1½ inch intake.

CLUTCH—Multiple disc, dry plate; Raybestos linings, entirely enclosed; 7 driving plates, 7 driven plates.

CONTROL—Left drive, speed shift lever and brake lever in center; spark throttle and horn button on top of steering wheel; foot accelerator.

COOLING SYSTEM—Total capacity of cooling system seven gallons. One drain valve for entire cooling system at bottom of water pump. Large capacity radiator core, cast aluminum shell, tanks and core suspended to avoid localized strain and to resist vibration. Bronze centrifugal gear driven pump with packing gland on each side of impeller. Large four blade ball bearing fan, driven direct from crankshaft by wide flat belt.

DISTILLATOR—A patented device that vaporizes the heavy ends of gasoline which passes the carburetor but before it enters the cylinders. This prevents liquid fuel accumulating in the cylinders, working past the pistons, and impairing lubricating qualities of oil in crankcase. The result is an unusual economy of fuel and lubricating oil; longer life for the engine and bearings, freedom from carbon troubles, and assures quick get-a-way, regardless of temperature conditions. All port holes 1½ inch.

ELECTRIC SYSTEM—*Source of Current*—Northeast 12 volt, 225 watt generator driven through flexible coupling on auxiliary shaft with voltage control regulator. Single wire system with ground return, 130 amp. h., 12 volt storage battery.

IGNITION—Bosch double ignition. Current supplied by generator and battery. Enclosed wiring. Elements: 2 sets spark plugs, 2 distributor heads, 2 coils, 2 switches.

LIGHTING—Large electric headlights with diffusing lenses, combination tail and stop light. Two instrument board lights and inspection light.

STARTING—Northeast separate unit, 12 volt with 13 tooth Bendix drive, mounted on flywheel housing.

ENGINE—Dorris, six cylinder, vertical, water-cooled valve-in-head; cylinders cast en bloc of three, one-piece detachable head; 4 inch bore, 5 inch stroke; piston displacement 377 cubic inches. Horse power S.A.E. rating 38.4, actually 80. Two valves per cylinder, detachable, opening in clear 1½ inches, lift ¾ inch, valve mechanism enclosed; valve seats integral and water circulation around each seat. Crankshaft drop forged 40 carbon steel heat-treated, 2½ inch diameter supported on seven main bearings, cam shaft drop forged with twelve cams supported on seven main bearings, driven from crankshaft by gear. Timing gears and cam gear, cast iron; crank gear, C. R. steel; generator gear C. R. steel. Three point suspension.

CRANK CASE—Made of special copper alloy aluminum, strength-to-weight ratio more than twice that of cast iron. Crankshaft supported by seven heavy crankcase webs; the most substantial engine foundation possible in motor coach engineering. Maximum engine speed under load 2800 R. P. M. Firing order, 1-5-3-6-2-4.

EQUIPMENT—Spare Budd disc wheel, spare wheel carrier, front fenders, hood, muffler; Dot high pressure lubricating system, front and rear bar bumpers; ball bearing horn, speedometer, ammeter, and oil gauge. Complete set of tools, including jack and inspection lamp.

FRAME—Cold pressed channel steel, heat treated, with tapered ends, 9 inches deep, 2¾ inch top and bottom flanges, ¼ inch stock; arched over rear axle, rigidly braced by six heavy cross members, hot-riveted, and ten gussets of liberal proportions. Ten outriggers 21 inches long assist to support the body and load.

GASOLINE TANK—Built under outriggers right side of chassis and may be filled from the outside. Capacity, 32 gallons. Convenient filler cap and gauge. Vacuum system feed.

GAUGE—Front tread, 72¼ inches; rear tread, 71¼ inches.

LUBRICATION—Full force feed to seven main crankshaft bearings, to all connecting rod bearings, and to piston pins; oil circulated by gear pump, with pressure gauge on instrument board. Valve mechanism and rocker arms automatically oiled. Valve rods entirely enclosed in tubes.

PAINT—Chassis in priming and lead coat.

SPRINGS (FRONT)—Semi-elliptic, made of Chrome Vanadium steel, 42x3 inches, spring eyes bronze bushed, spring bolts hardened and ground, drilled for oil.

SPRINGS (REAR)—Semi-elliptic, Chrome Vanadium steel, 60x4 inches, spring eyes bronze bushed, spring bolts hardened and ground, drilled for oil. Rear springs are "underslung."

STEERING GEAR—Ross, cam and lever type with disc controls mounted left hand side of frame, inclined, rigidly braced. Very effective and easily operated. Twenty inch hand wheel, selected walnut.

TIRES—Chassis equipped with 36x6 heavy duty cord pneumatic tires all around, dual tires on rear wheels. Larger single tires on rear optional.

TRANSMISSION—Brown-Lipe selective sliding gear, integral with motor; four speeds forward and reverse; levers mounted direct. Brake lever mounted on side of transmission. Worm gear driven speedometer driving gear, enclosed. Direct on fourth speed.

UNIVERSAL JOINTS—Spicer, four, steel, heat-treated, affording negligible power loss.

WHEELS—Budd-Michelin disc type.

PRICE—Chassis only in standard equipment,

f. o. b. St. Louis, Mo., \$5,450.00

Excise tax to be added.

NOTE—The right is reserved to change specifications or prices without incurring responsibility with regard to chassis and motor coaches previously sold.

MECHANICAL SPECIFICATIONS MODEL M4 COACH CHASSIS

AXLE (FRONT)—Timken drop forged I-beam model 1341.

AXLE (REAR)—Wisconsin double reduction, model 42-B; gear ratio 4.6 to 1. Fitted with duplex wheel bearings and special oil retaining guards. Hotchkiss drive construction.

BRAKES—*Service*—Internal expanding band type operated by cam and levers. Brake drums, 18x4 inches. *Emergency*—External, contracting on propeller shaft, 10x5 inches.

CARBURETION—The Stromberg carburetor is used to correctly proportion the gasoline and air to the Dorris Distillator. This carburetor maintains the proper relation of gasoline and air through the entire driving speed range. 1¼ inch intake.

CLUTCH—Multiple disc, dry plate; Raybestos linings, entirely enclosed. 7 driving plates, 7 driven plates.

CONTROL—Left drive, speed shift lever and brake lever in center. Spark throttle and horn button on top of steering wheel. Foot accelerator.

COOLING SYSTEM—Total capacity of cooling system six gallons. One drain valve for entire cooling system at bottom of water pump. Large capacity radiator core, cast aluminum shell, tanks and core suspended to avoid localized strain and to resist vibration. Bronze Centrifugal gear driven pump; large four blade ball bearing fan driven direct from crankshaft by wide flat belt.

DISTILLATOR—A patented device that vaporizes the heavy ends of gasoline which passes the carburetor but before it enters the cylinders. This prevents liquid fuel accumulating in the cylinders, working past the pistons, and impairing lubricating qualities of oil in crankcase. The result is an unusual economy of fuel and lubricating oil; longer life for the engine and bearings, freedom from carbon troubles, and assures quick get-a-way, regardless of temperature conditions. All port holes 1½ inch.

ELECTRIC SYSTEM—*Source of Current*—Bosch 6 volt 130 watt generator driven from crankshaft by gear. Single wire system with ground return 130 amp. h., 6 volt storage battery.

IGNITION—Bosch ZR-4 high tension magneto, inclosed wiring. Magneto driven through flexible coupling on end of generator shaft.

LIGHTING—Large electric headlights with diffusing lenses, combination tail and stop light. One instrument board light and inspection lamp.

STARTING—Bosch separate unit, 6 volt with 13 tooth Bendix drive, mounted on flywheel housing.

ENGINE—Dorris, 4-cylinder vertical, water-cooled, valve-in-head; cylinders cast en bloc, one piece detachable head. 4¼ inch bore, 5½ inch stroke; piston displacement 312 cubic inches. Horse power S. A. E. rating 28.9, actually 45. Two valves per cylinder, detachable opening in clear 1½ inch, lift ¾ inch. Valve mechanism enclosed valve seats integral and water circulation around each seat. Crankshaft drop forged 40 carbon steel, heat-treated, 2½ inch diameter supported on five main bearings. Cam shaft drop forged with 8 cams supported on five main bearings, driven from crankshaft by gear. Timing gears and cam gear, cast iron; crank gear, C. R. steel; generator gear, cast iron. Three point suspension.

CRANK CASE—Material, special copper alloy aluminum, strength-to-weight ratio more than twice that of cast iron. Crankshaft supported by 5 heavy crankshaft webs. The most substantial engine foundation possible in motor coach engineering. Maximum engine speed under load, 1600 R. P. M. Firing, 1-3-4-2.

EQUIPMENT—Spare Budd disc wheel, spare wheel carrier, front fenders, hood, muffler. Dot high pressure lubricating system, front and rear bar bumpers. Ball bearing horn, speedometer, ammeter and oil-gauge. Complete set of tools, including jack and inspection lamp.

FRAME—Cold-pressed channel steel, heat treated, with tapered ends, 6 inches deep, 2½ inch top and bottom flanges, ¼ inch stock, arched over rear axle, rigidly braced by four heavy cross members, hot-riveted, and six gussets of liberal proportions. Eight outriggers 21 inches long assist to support the body and load.

GASOLINE TANK—Built under outriggers right side of chassis and may be filled from the outside; capacity, 24 gallons. Convenient filler cap and gauge. Vacuum system feed.

GAUGE—Front tread 57¼ inches. Rear tread 56 inches.

LUBRICATION—Full force feed to five main crankshaft bearings, to all connecting rod bearings, and to piston pins; oil circulated by gear pump, with pressure gauge on instrument board. Valve mechanism and rocker arms automatically oiled. Valve rods entirely enclosed.

PAINT—Chassis in priming and lead coat.

SPRINGS (FRONT)—Semi-elliptic, made of Chrome Vanadium steel, 40x2½ inches, spring eyes bronze bushed, spring bolts hardened and ground drilled for oil.

SPRINGS (REAR)—Semi-elliptic, Chrome Vanadium steel, 60x3 inches, spring eyes bronze bushed, spring bolts hardened and ground drilled for oil. Rear springs are "underslung."

STEERING GEAR—Ross, cam and lever type with disc controls mounted left hand side of frame, inclined, rigidly braced. Very effective and easily operated. Twenty inch hand wheel, selected walnut.

TIRES—Chassis equipped with 32x6 Heavy Duty Cord pneumatic tires all around, dual tires on rear wheels. Larger single tires on rear, optional.

TRANSMISSION—Brown-Lipe selective sliding gear, integral with motor; four speeds forward and reverse; levers mounted direct. Brake lever mounted on side of transmission. Worm gear driven speedometer driving gear, enclosed. Direct on fourth speed.

UNIVERSAL JOINTS—Spicer, three, steel, heat-treated, affording negligible power loss.

WHEELS—Budd-Michelin disc type.

PRICE—Chassis only in standard equipment,

f. o. b. St. Louis, Mo., \$3,535.00

Excise tax to be added.

NOTE—The right is reserved to change specifications or prices without incurring responsibility with regard to chassis and motor coaches previously sold.

